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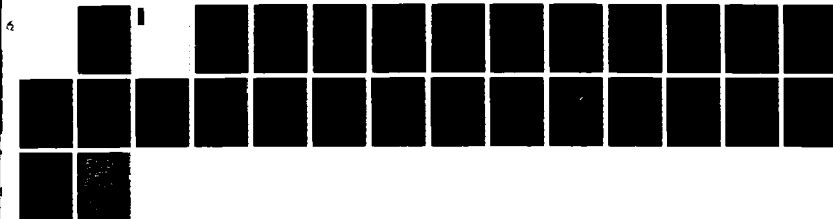
WINNING THE AIRLAND BATTLE WITH TACTICAL ENGAGEMENT
SIMULATION(U) ARMY WAR COLL CARLISLE BARRACKS PA
R H SULZEN 31 MAR 86

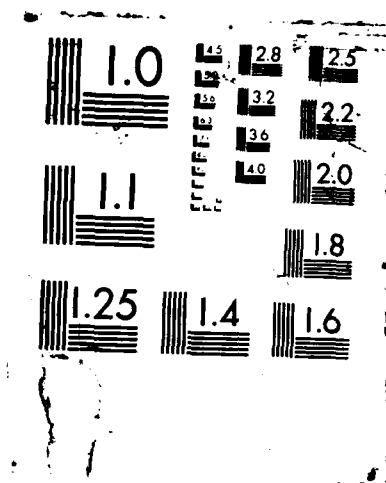
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WINNING THE AIRLAND BATTLE WITH TACTICAL ENGAGEMENT SIMULATION

by

Lieutenant Colonel Robert H. Sulzen
Infantry

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US Army War College
Carlisle Barracks, Pennsylvania
31 March 1986



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To win the AirLand Battle we must achieve a qualitative superiority. The Warsaw Pact nations have achieved a quantitative superiority and possess approximate technical equivalence in basic military hardware. Superior combat performance can be achieved through repetitive Tactical Engagement Simulation training using MILES until objective standards are reached. Few units now employ MILES as it was designed to be used. Strapping on MILES does not ensure realism, however, realism is vital for successful tactical training. Research has revealed that Tactical Engagement Simulation trained Light Infantry platoons had a 30 to 1 greater chance of winning an offensive mission than did less well trained platoons opposed by well trained defenders. Similarly trained Combined Arms teams had a 15 to 1 greater chance of winning an offensive mission, and the OPFOR Motorized Rifle Regiment at the National Training Center (also well trained with Tactical Engagement Simulation) had a 5 to 1 greater chance of winning an offensive mission. Repetitive Tactical Engagement Simulation training, to criterion performance, with the rules of engagement enforced will greatly enhance the probability of winning the AirLand Battle.

WINNING THE AIRLAND BATTLE WITH TACTICAL ENGAGEMENT SIMULATION

The AirLand Battle we in the US Army seek to win is on the future battlefield as described in Chapter 1 of Field Manual 100-5.¹ The manual describes in great detail how to go about winning that battle and is the Army's keystone How to Fight manual.² The manual even states, in general terms, how best to go about training: "...as individuals and as members of teams under conditions that approximate combat."³ It is my premise that the US Army at large does not yet train as it should for the AirLand Battle, that solutions other than training are implausible and that, until we train as we should, we will be less likely to win the AirLand Battle.

One emphasis other than training provided in the previous FM 100-5 was on achieving a specific superior force ratio.⁴ However, effectiveness in combat depends on more than the numbers of personnel and equipment arrayed on either side of the battlefield. To win we must achieve a qualitative superiority, since the Warsaw Pact nations have achieved a quantitative superiority with approximate technological equivalence of basic military hardware. It is highly unlikely that Western democratic nations can gain a quantitative advantage over the Warsaw Pact nations. Such an approach is politically unacceptable to the West as long as the potential enemy appears to remain deterred from military encroachment.

The qualitative superiority of basic military hardware through high technology is another solution that will be difficult, if not impossible, to achieve in the future. Even if possible, qualitative superiority of weapons would be very expensive as well. The answer to success in combat

must be outside the realm of strictly technological answers or increases in numbers of forces.

HOW TO WIN

We can succeed in combat by superior performance of units which can be achieved through better tactical training of soldiers and their leaders. "Come now," you say, "Isn't better tactical training something we all advocate, but is little more than a platitude? Besides, we've been told by senior leaders, 'If it ain't broke, don't fix it.'"

Well, it was broke, and now some units are trying hard to fix it. In the situation which most closely parallels combat according to the Chief of Staff⁵ (the National Training Center), our units have not done as well as anticipated.⁶ Furthermore, after four years of experience at the National Training Center (NTC), we are still making some of the same mistakes,⁷ although those who have observed the NTC and its effects on training believe we are making steady progress.⁸ Many of these mistakes could be remedied by training more often and effectively with the Multiple Integrated Laser Engagement System (MILES).⁹

As the Army tries to implement the AirLand Battle doctrine,¹⁰ Lieutenant Colonel Cope has emphasized the need for additional tactical training to achieve the transition to the new doctrine:

Today's business-as-usual approach to training will not produce a tactical force capable of implementing FM 100-5 in the manner envisioned. A change in tactical doctrine always demands an increased commitment to training...¹¹

Lieutenant Colonel Cope also points out that repetitive tactical exercises using MILES is the best method for developing skills in the junior leaders¹² who will implement the AirLand Battle doctrine.

Colonel Thompson, USMC (Retired) has pointed out that a Marine task force which conducted an intensive training program for three months, followed by two additional months of twice daily tactical exercises, was still not performing well enough to overcome an NTC-like Opposing Force (OPFOR).¹³ He concluded:

Our Marine Force was simply not executing properly. Techniques were poor. Shortcomings ranged from the simplest details (often taken for granted) to more complex aspects of combined arms coordination...Based on [this] experience, I am absolutely convinced we do not train to the degree necessary to¹⁴ perfect our system and operate it effectively.

Additional training, alone, is not the answer. Research reveals that squads and platoons receiving the same amount of training time can vary considerably in the effectiveness of their performance.¹⁵ Tactical Engagement Simulation training conducted for the same duration as conventional training resulted in significantly improved performance in simulated combat exercises.¹⁶

What we need to do is the following:

1. Provide our soldiers and their leaders with realistic training by enforcing the Tactical Engagement Simulation rules of engagement.
2. Achieve high levels of unit tactical proficiency by conducting repetitive Tactical Engagement Simulation exercises.
3. Establish unit standards of performance or objective criterion measures using Tactical Engagement Simulation.

These actions can greatly improve our combat readiness and lead to winning the AirLand Battle with Tactical Engagement Simulation.

Tactical Engagement Simulation and MILES

Most military people associate Tactical Engagement Simulation with MILES. However, the two terms are not synonymous. MILES devices provide a capability to simulate the casualty-producing effects of direct fire weapons. However, strapping on MILES devices does not ensure that a Tactical Engagement Simulation exercise will occur. In fact, research with tactical units employing MILES has shown that "objective casualty assessment was seldom achieved."¹⁷

Tactical Engagement Simulation attempts to provide "an environment almost identical to combat."¹⁸ In order to achieve this level of realism, a control system is necessary to enforce the rules of engagement. For too many commanders this requirement is either unknown, or is viewed as merely a nuance developed by TRADOC devotees who are isolated from the practical realities of conducting unit tactical training. Nothing could be further from the truth.

The concepts developed in Tactical Engagement Simulation have evolved over a ten year period; and they were not developed behind a desk, but in the field with troops employing the system at all stages. Field tests were sometimes conducted with higher levels of support than are usually associated with tactical unit training. However, when there is sufficient command emphasis, the techniques that were eventually developed can be implemented in tactical units without unacceptable support requirements. Tactical training for our soldiers to prepare for combat certainly warrants full command emphasis.

Realism

The rules of engagement in Tactical Engagement Simulation were developed to ensure realism, and realism is vital for successful tactical training. Unrealistic tactical training reduces soldiers to the level of children on the block playing cops and robbers shouting: "Bang! Bang! You're dead!" "No, I'm not!" As long as the realistic effects of weapons are not portrayed, participation is half-hearted. When realistic rules of engagement are enforced (a real "Gotcha"), then participants are actively and realistically involved.

The influence of realism in generating a high level of involvement can be observed in the civilian sector. A Life Magazine article emphasized the exhilaration experienced by civilians playing the National Survival Game in the woods of New Hampshire.¹⁹ The game makes use of a CO₂ pellet gun firing dye-filled pellets and is played by a diverse group for enjoyment. It seems to have national appeal in a variety of environments, since it is also played in the California desert by a group of entertainment executives.²⁰ Another game called "Photon" is played by civilians indoors with "phaser" guns and detectors, very much like MILES.²¹ The realism in these "simulations" is unquestionably a strong motivating influence.

Our soldiers are also motivated when they participate in properly controlled, realistic exercises.²² Soldier motivation and involvement during tactical exercises are important to leaders as well as followers, not just from the standpoint of providing satisfaction to the soldier. A unit actively involved in "killing" the enemy while trying to "survive" is dramatically different than a group of disinterested soldiers moving around during blank fire exercises. That level of involvement in

realistic exercises presses the leader to perform to his maximum capability. He cannot observe the enemy with immunity, nor maneuver²³ without fear of retribution. Furthermore, the leader must provide more detailed orders and instructions to convey his intent and ensure the mission is accomplished, particularly if he becomes a casualty. Also, his subordinates must be trained to do the leader's job and take over quickly under stressful circumstances.

The direct fire weapons simulated by the MILES devices provide only one dimension of realism. A training environment that simulates other lethal aspects of the battlefield is far more realistic to the participants. The Tactical Engagement Simulation training circular states that the simulation systems should include fire marker teams to simulate²⁴ indirect fire and REALTRAIN mines. Other Types of simulation include hand grenades, antitank weapons used against bunkers, EW, NBC, and close air support. Many units do not include these systems in their training and suffer the attending loss of realism.

Poor Tactical Engagement Simulation Use

Leaders in the Army should be concerned primarily with the effective tactical training of their troops. Why, then, do commanders fail to employ the control system that would ensure realism and improve performance? Obviously, there is no one answer to that question. In our²⁵ current training environment there are training detractors. Little time is available for training preparation, and considerable time is required to train controllers to properly enforce the rules of engagement. Our service schools do not train junior officers in the use of Tactical²⁶ Engagement Simulation as it was designed. As a consequence, the burden

for proper training of controllers falls on our units. Even if more time were available, finding the personnel to serve as controllers would be difficult. Controllers are seen by many commanders as "training overhead."

Commanders often observe what appears to be an effective "MILES exercise" when in actuality the rules of engagement are not properly enforced. There is one account of a mechanized infantry battalion, well turned-out for a "white glove" inspection, that duly impressed the visiting general. However, when the maintenance inspectors checked the beautifully clean vehicles, they found them to be unsatisfactory. Like that "spit and polish" battalion, our soldiers can conduct blank fire exercises with MILES devices affixed to their weapons when the rules of engagement are not enforced. The undiscerning commander thinks such exercises are good tactical training. What they are, in fact, is form without substance.

Soldiers who feel they can be successful only if they cheat pose ²⁷ another serious threat to realistic field exercises. If controllers are not trained to observe and prevent cheating, the training exercises will quickly lose their value. The greatest losers in this situation are the soldiers who cheat. They fail to learn the valuable lessons of simulated combat. To prevent this malaise, commanders must first train controllers properly and then promptly discipline anyone who tries to cheat.

Even commanders who have trained controllers and provided the time for Tactical Engagement Simulation training often make another serious error, usually with the best of intentions. They allow soldiers or equipment with inoperative MILES gear, or with no MILES gear, to participate in exercises "in order to get some training." What they do,

in reality, is markedly reduce the effectiveness of the training they are conducting. Soldiers or tanks that cannot be killed become "supermen" or "supertanks," and the result is an exercise that no longer resembles Tactical Engagement Simulation.

How to Ensure Realism

The way to ensure realism is to enforce the Tactical Engagement
28
Simulation rules of engagement. Basically these rules are:

First: All participants (both personnel and vehicles) must be realistically vulnerable to opposing weapons.

Second: All weapons must produce a simulation of the weapon's signature and the weapon's effects.

29

Controllers and the chain of command must be certain these rules are strictly obeyed by doing the following:

1. All MILES detectors must be checked with the control gun before EACH exercise to ensure that they are working.
2. Spare batteries, both 9 volt (personnel) and 6 volt (vehicles), should be available in sufficient quantity (try a "10% extra" rule of thumb to start, and adjust as necessary).
3. Spare MILES gear (personnel and vehicle) should be available (10% to 20%, depending on the state of the equipment).
4. The above spares (2 and 3) need to be in the vicinity of where the MILES equipment checks (1) are made to achieve maximum participation.
5. After all possible measures are taken to ensure maximum participation, DO NOT ALLOW SOLDIERS OR VEHICLES WITH INOPERATIVE SYSTEMS TO PARTICIPATE IN THE EXERCISE.
6. Make sure all MILES weapons have sufficient ammunition to simulate the appropriate signature. DO NOT ALLOW SILENT/SMOKELESS WEAPONS.

7. Zero all MILES weapons so the soldiers are able to hit the target at which they are aiming. Use the Small Arms Alignment Fixture (SAAF) for small arms and vehicle targets for the larger weapons.

8. During the exercise, observe for and remove any participant (soldier or vehicle) from the exercise whose MILES detectors become inoperative.

9. During the exercise, observe for and remove any participant whose weapon does not provide a signature (flash/bang).

10. During the exercise, ensure that soldiers that are hit by the MILES continue to participate ONLY as a casualty (except when they are returned to duty (RTD) by medical play).

Research and experience have demonstrated that when these actions are taken and other lethal aspects of the battlefield are simulated (ie., hand grenades, claymore and antitank mines, indirect fire, EW, NBC, etc.) in a realistic manner, soldiers are well motivated, leaders learn more, and training is vastly improved. Training controllers to enforce the rules of engagement should be a top priority for the commander and the chain of command. In many cases, the best choice for controller/trainer is commander two echelons up, with his key subordinate leaders.

Repetitive Training

Often commanders do everything to ensure the rules of engagement are enforced, but they still don't conduct enough exercises. "Wait a minute, just because something is good, what makes you think that more of it is better?" Tactical Engagement Simulation training is experiential in nature. When more training is conducted, more experience is gained and performance improves.³⁰ The MILES training circular states that the most effective training occurs when units conduct repetitive training: "Based

on experience, at least three repetitions...are required to achieve an
improvement in combat proficiency."

The Need for a Criterion Measure

How much training is enough? One author, writing on combat effectiveness, made the point that until we measure it, we will not improve it. The Army Science Board and a GAO study made a similar point. As MILES was being developed, the problem of criterion measurement was recognized by personnel in the Directorate of Tactical Engagement Simulation. A coordinating draft of the training circular for MILES training specifically laid out measureable standards in order to ensure sufficient repetitive MILES training. The Army was not ready at that time for measureable standards, and the standards were expunged from the draft circular.

There were, of course, good reasons for avoiding explicit standards. In tactical training, standards are hard to achieve. The old saw, "It depends upon the situation," has some validity. The "situation" most often refers to the conditions of performance. These conditions include terrain, weather, force ratio, skill of the enemy, chance events and other factors which may have a major impact on the outcome of the battle. However, avoiding standards does not solve the fundamental problem of deciding how much is enough. Without an explicit goal and a way to measure it, we will never know if we have achieved our intent. Would it not be better to establish a criterion, state unit performance in relation to the criterion, and then cite conditions that may have been extraordinary?

Other areas (i.e., logistics) have established well defined standards. Many of these standards are in the administrative and logistical domain, and we have a much clearer understanding of our success or failure in attaining these ends. Training goals, by comparison, are ill-defined and, therefore, poorly suited to compete for budget attention. We should define our unit performance criterion by more measureable standards, such as, mission accomplishment with reduction of enemy forces by some percentage of casualties and the preservation of our own forces by some percentage. Setting the percentages should be done by recognized experts and tested in the field for adequacy.

RESEARCH EVIDENCE

With the exception of the research cited earlier (which was conducted with SCOPES and REALTRAIN, not MILES), the argument favoring Tactical Engagement Simulation may appear to be little more than zealous rhetoric by an enthusiast. What evidence is there that Tactical Engagement Simulation will really improve combat readiness or potential success in combat?

If one accepts the assumption that Tactical Engagement Simulation training, such as is conducted at the NTC, closely approximates actual combat, then evidence that specific training practices improve performance in the same or similar exercises should be a prima facie case for following these training practices.

In the evidence that follows, the exercises were conducted employing various simulation systems, including SCOPES, REALTRAIN, MILES, WESS, and the laser devices employed at the Combat Developments Experimentation Command (CDEC). The rules of engagement were enforced so that

participants had to have a weapons signature device (blank round, ATWESS cartridge, Hoffman device, etc.) and be capable of becoming a simulated casualty. In addition to direct fire weapons simulation, other systems with objective casualty assessment were used, to include at least one of the following: indirect fire, antitank mines, antipersonnel mines, hand grenades, antitank weapons against dug-in fighting positions, NBC weapons, and close air support.

Light Infantry Platoons

In a study to determine the relative effectiveness of varying levels of training on performance in an offensive mission, a variable was defined as "training ratio."³⁶ A High Training Ratio reflected greater training and experience on the part of the offense than the defense. An Even Training Ratio reflected equivalent training and experience on the part of the offense and the defense. A Low Training Ratio reflected less training on the part of the offense than the defense. Training Ratio categories were assessed by relative levels of Tactical Engagement Simulation training experience in field exercises. Training experience was judged by the following criteria: (a) the frequency of practice (or repetitive training) in Tactical Engagement Simulation exercises, (b) the degree to which previous training was relevant to the current mission, and (c) whether leaders received instruction on appropriate tactics. High Training Ratio soldiers always had more frequent practice than their opponents. In addition, High Training Ratio soldiers had more frequent practice on the current mission, and/or leader instruction on appropriate tactics. The Low Training Ratio soldiers had less training overall, and did not exceed their opponents in any category of training.

In the light infantry study, 237 battles were conducted in which light infantry platoons attacked defensive forces of varying size. Since force ratio has been considered an important variable by itself, it was a factor included in the study. The force ratio was defined as high (greater than 3 to 1) or low (less than 3 to 1). Winning was defined as accomplishing the mission and suffering no more than 60 percent casualties while inflicting at least 60 percent casualties on the defense.³⁷

Using Categorical Analysis it was found that Training Ratio had a highly significant overall effect (Chi-square=38.4, df=2, $p < .0001$) while there was no significant overall effect due to Force Ratio. Then a Relative Odds Analysis was used to develop an odds of success ratio. The Training Ratio improved the odds of winning 30 to 1. A highly trained offense going against a less well trained defense compared with a poorly trained offense going against a better trained defense produced these dramatic odds.³⁸ The Force Ratio effect only improved the odds of winning in the Even Training Ratio category, with High Force Ratio improving the odds of success at a 3 to 1 rate.

Combined Arms Teams

Additional data were located on 58 battles conducted by combined arms teams consisting of one tank platoon, two infantry squads, and an antiarmor section of two TOWS.³⁹ These teams opposed each other in a series of battles where the force ratio was held to a constant 1 to 1. The teams trained at four locations in Western Germany. Units were formed into A Teams and B Teams. The A Teams conducted training for three or four weeks while the B Teams were rotated each week. After the first week, A Teams opposed new and inexperienced B Teams. During the first

week, A and B teams were categorized as Training Ratio Even. In subsequent weeks, A Teams with offensive missions were categorized as High Training Ratio, and B Teams with offensive missions were categorized as Low Training Ratio. Winning was determined by senior military judges⁴⁰ observing the exercises.

Again employing Categorical Analysis it was found that there was a significant effect (Chi-Square=6.25, df=1, $p < .05$) for Training Ratio when contrasting High and Low Training Ratio conditions. A Relative Odds Analysis indicated that combined arms teams receiving more Tactical Engagement Simulation training had a 15 to 1 greater chance of successfully attacking a combined arms team receiving less training. Unlike the rifle platoon exercises, the force ratio was held to a constant, 1 to 1.

Heavy Battalion Task Forces/Regiments

Taking the analysis one step further, the author reviewed the take home package results from 428 battles conducted at the NTC over a three-year period. Since the OPFOR participates repeatedly in Tactical Engagement Simulation exercises, where the rules of engagement are enforced by the NTC Observer/Controllers, they were categorized as Training Ratio High. The US Army task forces that face the OPFOR were categorized as Training Ratio Low. There were so few cases of Training Ratio Even (OPFOR versus OPFOR), that they were excluded from the analysis. The definition of winning was judged by the author based on the comments recorded in the take home packages.

Since force Ratio was approximately 3 to 1 in most cases, it was excluded from the analysis. As the analyses described thus far focused on

offensive missions, only offensive missions were used for the NTC analysis. It is important to note one confounding factor in the NTC results. The OPFOR on offense attacks as a Motorized Rifle Regiment against a battalion task force (regiment versus battalion), while the task force usually attacks a reinforced Motorized Rifle Company (battalion versus company). However, the OPFOR regiment is always "High Training Ratio," while the task force is always "Low Training Ratio." High and Low Training Ratio differ by one full echelon, so training ratio and echelon are confounded. That is, the comparison groups differed not only by the amount of training received, but also by echelon (regiment/brigade vs. battalion/task force). Therefore, results could be attributed either to training or to echelon.

Other factors effecting performance at the NTC include the Soviet tactics employed by the OPFOR and the "home field" advantage they enjoy. Although the OPFOR employs Soviet tactics, they are still an American unit with American soldiers running the show. It is the author's opinion that the Soviet tactics have less effect on the outcome than the additional Tactical Engagement Simulation training they receive. Further, the OPFOR certainly know their way around the terrain, since they use it all the time. Although the OPFOR has this "home field" advantage, knowledge of the terrain alone cannot account for their performance.

Categorical Analysis demonstrated a highly significant overall effect for Training Ratio ($\chi^2=52.75$, $df=1$, $p < .0001$). The Relative Odds Analysis determined that the Tactical Engagement Simulation trained OPFOR Motorized Rifle Regiment had a 5 to 1 greater chance of attacking and defeating a less well trained US Army task force than the Army task force had of successfully attacking and defeating an OPFOR unit.

CONCLUSIONS

Enforcing the rules of engagement, conducting repetitive Tactical Engagement Simulation training, and establishing a criterion measure of tactical performance constitute training practices that can significantly effect the odds of winning in simulated combat exercises. Most units do not follow these practices. Commanders who emphasize Tactical Engagement Simulation, train controllers to enforce the rules of engagement, and repetitively conduct Tactical Engagement Simulation exercises with MILES until they reach criterion performance will greatly increase the combat readiness of their units. To do so will require careful attention to the details of conducting MILES exercises.

The research evidence indicates that units following repetitive Tactical Engagement Simulation training practices were able to win simulated offensive battles when opposed by less well trained defenders. When their performance was compared with offensive units opposed by better trained defenders the results were striking. Although we would expect training to have a positive effect, the magnitude of the actual results was not anticipated. Those results showed that the training increased the odds of winning an offensive mission by 30 to 1 for light infantry platoons, by 15 to 1 for combined arms teams, and by 5 to 1 for regiments (brigades). Clearly, the benefits of Tactical Engagement Simulation training are substantial. It also appears that those benefits are relatively stronger for lower echelon units.

To the extent that performance in Tactical Engagement Simulation exercises mirrors performance in actual warfare, we have uncovered important factors related to success in combat that are independent of the

sheer weight of numbers. The research data and our experience with tactical units in the field suggest that commanders who insist on properly conducted, repetitive Tactical Engagement Simulation exercises, conducted until they reach objectively measured criterion performance, are most likely to win the AirLand Battle.

A handwritten signature in black ink, appearing to read 'R. H. Sulzen', with a long horizontal line extending to the left.

ROBERT H. SULZEN
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FOOTNOTES

1. US Department of the Army, Field Manual 100-5, Operations, 1982, p. 1-1 through 1-2 (hereafter referred to as "FM 100-5, 1982").
2. Ibid., p. 1.
3. Ibid, p. 1-4.
4. US Department of the Army, Field Manual 100-5, Operations, 1976, p. 1-2 (hereafter referred to as "FM 100-5, 1976"). This version of FM 100-5 (1976) called for a combat power ratio of at least 6:1 at the offensive point of decision (p. 3-4), while the 1982 version emphasizes that combat power is relative and never absolute (p. 2-4).
5. John A. Wickham, Jr., GEN, "Leadership Is the Key in Coping With Wide Threat Spectrum," Army, October 1985, p.30, "Short of actual combat, this center [NTC] provides the most challenging training found anywhere."
6. James H. Banks, Lessons from the NTC: Common Battalion Task Force Training Needs, p. 28; William L. Shakelford, COL (Ret), Lessons from the NTC, p. 83; Jim Tice, "Units Found Lacking 'Go-to-War' Skills," Army Times, 7 March 1983, p.7; Jim Tice, "Deficiencies Plague Fort Irwin Training, GAO Report Says," Army Times, 2 April 1984, p. 2.
7. US General Accounting Office, Army Training: Need for a Lessons Learned System at the Army's National Training Center, (GAO/NRO-85-NO), p. 18, (hereafter referred to as "GAO Report GAO/NRO-85-NO").
8. Jim Tice, "Deficiencies Plague Fort Irwin Training, GAO Report Says," Army Times, 2 April 1984, p. 2.
9. William L. Shakelford, COL (Ret), Lessons from the NTC, p. 83.
10. John A. Cope, Jr., LTC, "Doctrine Credibility: A Problem of Focus with FM 100-5," Military Review, August 1984, p. 72.
11. Ibid.
12. Ibid., p. 71.
13. Robert H. Thompson, COL, USMC, (Ret), "Lessons Learned from ARMVAL," Marine Corps Gazette, July 1983, pp. 38-39.
14. Ibid., pp. 39, 41.
15. Thomas D. Scott, "Tactical Training for Ground Combat Forces," Armed Forces and Society, Winter 1980, pp. 218-223.
16. Ibid.
17. Cynthia Roberts-Gray, et al., MILES Integration Support Analysis Phase II, p. 16.

18. US Department of the Army, Training Circular 25-6, Tactical Engagement Simulation Training with MILES, p. 1-1 (hereafter referred to as "TC 25-6").
19. Elizabeth Owen, "Fun and War Games in the Woods," Life, May 1983, pp. 68-72.
20. Richard Stengel and Denise Worrell, "The Most Dangerous Game," Time, 17 September 1984, p. 95.
21. Gordon M. Henry, et al., "I Enjoy Shooting at My Friends," Time, 27 January 1986, p. 44.
22. Patrick J. Whitmarsh, An Assessment of Job Satisfaction of Combat Arms Personnel During REALTRAIN Training, November 1983, p. 6-7.
23. J. D. Macinnis, MAJ, Royal Canadian Regt., "MILES: The Canadian Connection," Army Trainer, Winter 1985, pp. 17-18.
24. TC 25-6, p. 1-4.
25. Steven L. Funk, MAJ, et al., Training Detractors in FORSCOM Divisions and How They are Handled, pp. 23-48.
26. Cynthia Roberts-Gray, et al., MILES Integration Support Analysis Phase II, pp. 20-21.
27. Charles R. Souza, SFC, "MILES Cheating: Key to Failure," Army Trainer, Summer 1985, pp. 3-5.
28. US Department of the Army, Training Circular 25-6-1, MILES Infantry Field Controller's Guide, p. 17 (hereafter referred to as "TC 25-6-1") and US Department of the Army, Training Circular 25-6-2, MILES Armor Field Controller's Guide, (hereafter referred to as "TC 25-6-2"), p. 17.
29. Ibid, pp. 17-22.
30. Larry E. Word, LTC and Robert T. Root, Tactical Engagement Simulation: Experiential Learning, pp. 2-3.
31. TC 25-6, p. 1-7.
32. Lewis Sorley, LTC (Ret), "Prevailing Criteria: A Critique," in Combat Effectiveness: Cohesion, Stress, and the Volunteer Military, ed. by Sam C. Sarkesian, LTC (Ret), p. 90.
33. Army Science Board, Final Report of 1985 Summer Study on Training and Technology, p. 6, "Effective and efficient unit training requires explicit, quantitative measurement."
34. GAO Report GAO/NRO-850NO, p. 6.

35. TRADOC Systems Manager for Tactical Engagement Simulation, Training Circular 71-4, How to Plan, Prepare, and Conduct MILES Training, p. L21-IPAI.
36. Roland J. Hart and Robert H. Sulzen, LTC, Comparing Success Rates in Simulated Combat: The Impact of Intelligent Tactics versus Force, p. 4.
37. Ibid, p. 5.
38. Ibid, p. 6.
39. Robert T. Koot, et al., Initial Validation of REALTRAIN with Army Combat Units in Europe, p. 11.
40. Ibid, pp.10-14.

SELECTED BIBLIOGRAPHY

1. Army Science Board, Final Report of 1985 Summer Study on Training and Technology, Washington: Draft Report, September 1985.
2. Banks, James H., Lessons from the NTC: Common Battalion Task Force Needs, Alexandria: Army Research Institute Draft Research Report, November 1985.
3. Cope, John A., Jr., LTC, "Doctrine Credibility: A Problem of Focus with FM 100-5," Military Review, Vol. 64, 8, August 1984, pp. 66-73.
4. Funk, Steven L., MAJ, et al., Training Detractors in FORSCOM Divisions and How They are Handled, Alexandria: Army Research Institute Research Report 1278, May 1980.
5. Hart, Roland J. and Sulzen, Robert H., LTC, Comparing Success Rates in Simulated Combat: The Impact of Intelligent Tactics versus Force, Draft Report, in preparation.
6. Henry, Gordon M., et al., "I Enjoy Shooting at My Friends," Time, Vol. 127, 27 January 1986, p. 44.
7. Macinnis, J. D., MAJ, Royal Canadian Regt., "MILES: The Canadian Connection," Army Trainer, Vol. 5, 2, Winter 1985, pp. 16-19.
8. Owen, Elizabeth, "Fun and War Games in the Woods," Life, Vol. 6, 5, May 1983, pp. 68-72.
9. Roberts-Gray, Cynthia, et al., MILES Integration Support Analysis Phase II, Alexandria: Final Contract Report for the Army Research Institute, February 1984.
10. Root, Robert T., et al., Initial Validation of REALTRAIN with Army Combat Units in Europe, Arlington: Army Research Institute Research Report 1191, October 1976.
11. Sarkesian, Sam C., LTC (Ret), ed. Combat Effectiveness: Cohesion, Stress, and the Volunteer Military, Beverly Hills: Sage Publications, Inc., 1980, Pp. 57-93: "Prevailing Criteria: A Critique," by Lewis Sorley, LTC (Ret).
12. Scott, Thomas D., "Tactical Training for Ground Combat Forces," Armed Forces and Society, Vol. 6, 2, Winter 1980, pp. 215-231.
13. Shakelford, William L., COL (Ret), Lessons from the NTC, Alexandria: Army Research Institute Draft Research Report, November 1985.
14. Souza, Charles R., SFC, "MILES Cheating: Key to Failure," Army Trainer, Vol. 4, 4, Summer 1985, pp. 3-5.
15. Stengel, Richard and Worrell, Denise, "The Most Dangerous Game," Time, Vol. 124, 17 September 1984, p. 95.

16. Thompson, Robert H. COL, USMC (Ret), "Lessons Learned from ARMVAL," Marine Corps Gazette, Vol. 67, 7, July 1983, pp. 36-44.
17. Tice, Jim, "Deficiencies Plague Fort Irwin Training, GAO Report Says," Army Times, 2 April 1984, p. 2.
18. Tice, Jim, "Units Found Lacking 'Go-to-War' Skills," Army Times, 7 March 1983, p. 7.
19. TRADOC System Manager for Tactical Engagement Simulation, Training Circular 71-4, How to Plan, Prepare, and Conduct MILES Training, Fort Eustis: Coordinating Draft, September 1980.
20. US Department of the Army, Field Manual 100-5, Operations, Washington: 1976.
21. US Department of the Army, Field Manual 100-5, Operations, Washington: 1982.
22. US Department of the Army, Training Circular 25-6, Tactical Engagement Simulation with MILES, Washington: 1982.
23. US Department of the Army, Training Circular 25-6-1, MILES Infantry Field Controller's Guide, Washington: 1984.
24. US Department of the Army, Training Circular 25-6-2, MILES Armor Field Controller's Guide, Washington: 1984.
25. US Government Accounting Office, Army Training: Need for A Lessons Learned System at the Army's National Training Center, Washington: Draft Report to the Secretary of the Army (GAO/NRO-85-NO), 1985.
26. Whitmarsh, Partick J., An Assessment of Job Satisfaction of Combat Arms Personnel During REALTRAIN Training, Alexandria: Army Research Institute Technical Report 597, November 1983.
27. Wickham, John A., Jr., GEN, "Leadership Is the Key in Coping With Wide Threat Spectrum," Army, Vol. 35, 10, October 1985, pp. 22-25, 28-30, 34-36, 38, 40, 42.
28. Word, Larry E., LTC and Root, Robert T., Tactical Engagement Simulation: Experiential Learning, Fort Eustis: TRADOC Pamphlet, 1977.

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